

REMARKS

Applicants acknowledge receipt of an Office Action dated April 7, 2003 (hereinafter the "Office Action") as well as an Advisory Action dated August 21, 2003 (hereinafter the "Advisory Action"). Claims 13-41 remain pending in the application and Applicants have added claims 42-44. Support for these claims may be found in the Specification, *inter alia*, at the paragraph bridging pages 2 and 3. Reconsideration of the present application is respectfully requested in view of the foregoing amendments and the remarks which follow.

Rejections Under 35 U.S.C. §103

On page 2 of the Office Action, the PTO has rejected claims 13, 17-30 and 35-41 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 5,928,737 to Hammer *et al.* (hereafter "Hammer '737") in view of U.S. Patent 5,928,739 to Pophusen *et al.* (hereafter "Pophusen"). In addition, on page 4 of the Office Action, the PTO has rejected claims 14-16 under 35 U.S.C. §103(a) as being unpatentable over Hammer in view of U.S. Patent 6,406,530 to Bengs (hereafter "Bengs"). Finally, on pages 4 and 5 of the Office Action, the PTO has rejected claims 31-34 under 35 U.S.C. §103(a) as being unpatentable over Hammer in view of U.S. Patent 4,410,011 to Andra *et al.* (hereafter "Andra"). Applicants respectfully traverse these rejections for the reasons set forth below.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, a prior art reference (or references) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure. *In re Vaeck*, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Here, as acknowledged by the PTO on page 2 of the Office Action, Hammer '737 fails to teach or properly suggest a "mixture which comprises a) thermoplastic starch, a thermoplastic starch derivative or a mixture thereof and b) at least one other polymer"

(emphasis added) as recited in independent claim 13. For that matter, Hammer '737 fails to teach or properly suggest any of the synthetic polymers set forth in present claim 13. These synthetic polymers render the casing of the presently claimed invention resistant to hot water by forming a matrix which protects the starch from being dissolved by steam or hot or boiling water. Applicants have already discussed this unexpected benefit in the present specification, e.g. in the paragraph bridging pages 2 and 3. In this paragraph, Applicants have pointed out that casings which consist only of thermoplastic starch or thermoplastic starch derivatives do not have the desired level of stability when placed in contact with hot or boiling water. When the thermoplastic starch or thermoplastic starch derivatives are mixed with the specific polymers recited in present claim 13, in particular with the polyesterurethanes, polyetherurethanes, and polyesteretherurethanes, Applicants surprisingly found that casings formed from this mixture exhibited the desired level of stability.

In present Example 2, it is disclosed that the casing was resistant to simmering. Further, in present examples 3 and 4 it is mentioned that the casing was suitable for scaled-emulsion sausage (which is treated with steam or hot water). In present Example 1 the hot-water resistance was not mentioned since the casing was used in the production of long-lasting sausage (which is not exposed to steam or hot water, but instead ripened at ambient temperatures for several weeks). Applicants have provided herewith microphotographs which show the matrix structure of a casing based on thermoplastic starch and polyesterurethane. These images depict the matrix structure which remains after the thermoplastic starch has been dissolved out.

With the casing as disclosed by Hammer '737 the object of providing a hot-water resistant casing was not achieved, not even with the embodiment in which the casing contains the additional polymers as recited in col. 3, l. 48 - 55, of the reference. The polyesters, polyolefins, polyamides, ethylene/ethylacrylate/maleic anhydride copolymers or PVP-copolymers do not form the above-mentioned matrix which imparts resistance to steam and hot or boiling water. In the casing as disclosed by Hammer '737 and comprising the additional polymers the starch is leached out by hot or boiling water and the casing finally disintegrates. In Examples 2 and 3 of Hammer '737 the production of a scalded sausage is described. But in these Examples the scalding requires dry heat, not hot steam or hot water.

In order to resolve the deficiencies of Hammer '737, the PTO has attempted to combine Hammer '737 with Pophusen. Applicants, however, respectfully submit that such a combination is improper (1) because the PTO has failed to set forth *any* motivation for combining the references and (2) because the PTO has failed to establish a reasonable expectation of success based on the proposed combination.

With regard to the lack of motivation to combine the references, the PTO has responded to Applicants previous arguments by stating, at the top of page 6 of the Office Action, that "Pophusen teaches it is old and well-known in the analogous art to have a food casing containing a polyesterurethane." The PTO then states, "[t]herefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to have the polymer in Hammer et al. consist of polyesterurethane as suggested by Pophusen et al. in order to produce a food casing produced from a) thermoplastic starch, a thermoplastic starch derivative or a mixture thereof and b) a specifically claimed polymer with 'a weight ration of a):b) being in a range from 90:10 to 10:90' as set forth in claim 13."

Even assuming *arguendo* that the cited references could be combined, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 16 USPQ2d 1430 (Fed. Cir. 1990). Further, Applicants note that a mere statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art (and Applicants do not submit here that they were) is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See also *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000). The PTO's statements responding to Applicants' previous arguments still fail to establish the desirability of the proposed combination or any reason for combining the references. Accordingly, Applicants submit that the outstanding rejections are improper and should be withdrawn.

With regard to the lack of a reasonable expectation of success, Applicants note that Pophusen discloses thermoplastically processable, biodegradable polymers, specifically aliphatic and partly aromatic polyesters, thermoplastic aliphatic polyester urethanes, aliphatic-aromatic polyester carbonates and aliphatic polyester amides (col. 3, l. 23 - 26), but not as a blending component of a mixture. Instead, the polymers are employed to produce biaxially stretched sausage casings having a discrete layer which consists essentially of the thermoplastically processable polymers. Although the raw materials may contain processing agents and additives, such as nucleating agents, stabilizers and lubricants (col. 5, l. 17 - 20), thermoplastic starch is not disclosed by Pophusen and is not contemplated as a possible ingredient of the layer comprising the biodegradable polymers. It should be noted that according to present claim 13 the thermoplastic starch and/or derivative thereof is present in an amount of at least 10 % by weight, *i.e.* in an amount which materially affects the properties of the sausage casing. Thus, a person skilled in the art would have had no reasonable expectation that the polymers disclosed by Pophusen could be used successfully to produce a casing based on starch or a starch-derivative.

Finally, Applicants remind the PTO that the obviousness standard of § 103 is addressed to the “invention as a whole,” which includes all of the advantages of the claimed subject matter. The present invention is directed to a thermoplastic starch and/or thermoplastic starch derivative-containing food casing that has been shown to possess the property of being resistant to dissolution by steam or hot or boiling water. The PTO has failed to point to, and indeed, the cited prior art is devoid of any teaching or suggestion that the use of Pophusen’s polymers in the context of Hammer ‘737’s sausage casings would result in a product having this significant advantage. Consequently, the PTO has failed to meet its burden of demonstrating a reasonable basis for concluding that the “invention as a whole” would have been obvious to a person skilled in the art at the time the invention was made.

In view of the foregoing, Applicants submit that neither Hammer '737 nor Pophusen, taken either individually or in proper combination, teach or fairly suggest the embodiments of the invention set forth in independent claim 13 or in claims 14-41 which ultimately depend therefrom.

With particular regard to the rejection of claims 14-16 based only upon Hammer in view of Bengs, Applicants note that neither Hammer nor Bengs, taken either individually or in combination, teach or fairly suggest any of the synthetic polymers set forth in claim 13, from which claims 14-16 ultimately depend. Accordingly, Applicants submit that the rejections of claims 14-16 are improper and should be withdrawn.

Finally, with regard to the rejections of claims 31-34 based only upon Hammer in view of Andrä, Applicants note that neither Hammer nor Bengs, taken either individually or in combination, teach or fairly suggest any of the synthetic polymers set forth in claim 13, from which claims 31-34 ultimately depend. Further, Applicants note that Andrä has been cited by the PTO with respect to the fillers disclosed therein. Andrä teaches a tubular food casing comprising a web of material comprising a naturally occurring polymer curved along its longitudinal axis such that the edge regions are overlapping, a layer of a substantially water-insoluble adhesion-promoting resin covering the inside and/or outside of the web at least in the area of the edge regions, a strip of film applied to the longitudinal edge regions, and layer of a pressure-sensitive adhesive interposed between the strip of film and the edge regions of the web material (col. 4, lines 43 - 63). It is the layer of the pressure-sensitive adhesive which may comprise a filler, such as kaolin, glass beads, etc. (col. 13, lines 40 - 44). A seamless casing as presently claimed does not have or need any adhesive layers. Accordingly, Applicants submit that a person of ordinary skill in the art of making food casings thus would not have found any motivation to employ the fillers as taught by Andrä in the seamless sausage casing of Hammer '737. Applicants therefore submit that the rejections of claims 31-34 are improper and should be withdrawn.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. §103.

Newly Added Claims

In this Response, Applicants have added claims 42-44. With regard to claim 42, Applicants note that none of the cited references, taken individually or in fair combination, teach or properly suggest a seamless, tubular food casing which is blown in an

area ratio of from 1:2 to 1:10, produced from a thermoplastic mixture which comprises a) thermoplastic starch, a thermoplastic starch derivative or a mixture thereof and b) at least one other polymer selected from the group consisting of a homo- or copolymer comprising hydroxycarboxylic acid units, a polyesterurethane, a polyetherurethane, a polyesteretherurethane and a polyalkylene carbonate of the formula $-\text{CHR}^1-\text{CHR}^2-\text{O}-\text{CO}-\text{O}-\text{]}_n$, where R^1 and R^2 independently of one another are a hydrogen atom or a ($\text{C}_1\text{-C}_4$) alkyl radical and n is an integer from 10 to 5000, wherein a weight ratio of a:b is in a range from 90:10 to 10:90 and wherein the food casing remains stable on exposure to hot water as recited in claim 42. With regard to claim 43, Applicants note that this claim depends from claim 42 and that none of the cited references, taken either individually or in fair combination, teach or properly suggest a seamless, tubular food casing wherein the food casing remains stable on exposure to boiling water as recited in claim 43.

Further, with regard to claim 44, Applicants note that none of the cited references, taken either individually or in fair combination, teach or properly suggest a seamless, tubular food casing which is blown in an area ratio of from 1:2 to 1:10, produced from a thermoplastic mixture which comprises a) thermoplastic starch, a thermoplastic starch derivative or a mixture thereof and b) at least one other polymer selected from the group consisting of a homo- or copolymer comprising hydroxycarboxylic acid units, a polyesterurethane, a polyetherurethane, a polyesteretherurethane and a polyalkylene carbonate of the formula $-\text{CHR}^1-\text{CHR}^2-\text{O}-\text{CO}-\text{O}-\text{]}_n$, where R^1 and R^2 independently of one another are a hydrogen atom or a ($\text{C}_1\text{-C}_4$) alkyl radical and n is an integer from 10 to 5000, wherein a weight ratio of a:b is in a range from 90:10 to 10:90 and wherein component b is present in an amount sufficient to render the food casing stable on exposure to hot or boiling water as recited in claim 44.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that all of the pending claims are now in condition for allowance. An early notice to this effect is earnestly solicited. If there are any questions regarding the application, the Examiner is invited to contact the undersigned at the number below.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that all of the pending claims are now in condition for allowance. An early notice to this effect is earnestly solicited. If there are any questions regarding the application, the Examiner is invited to contact the undersigned at the number below.

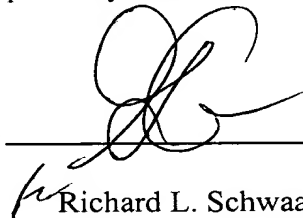
The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date

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By

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